惠斯通電橋→戴維寧等效電路

電路實驗

系級：資工二乙

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(1)實驗結果表格

	I_L	V_{TH}	R_{TH}	$I_{L(TH)}$
量測值	9.85mA	5.53V	342 Ω	9.84mA
計算值	X	5.53V	342 Ω	9.84mA

V_{TH} = VS * [R2 / (R1+R2)] – VS * [R4 / (R3+R4)]

= 10(V) *(1.5k / 200 + 1.5k) – 10(V) *(220 / 470 + 220)

= 8.72(V) – 3.19(V) = 5.53(V)

R_{TH} = (R1 // R2) + (R3 // R4)

= ((R1 * R2) / (R1+R2)) + ((R3 * R4) / (R3+R4))

= ((220 * 1500) / (220+1500)) (Ω)+ ((470 * 220) / (470+220)) (Ω)

= 191.86(Ω) + 149.85(Ω)

= 341.7(Ω) ≒ 342(Ω)

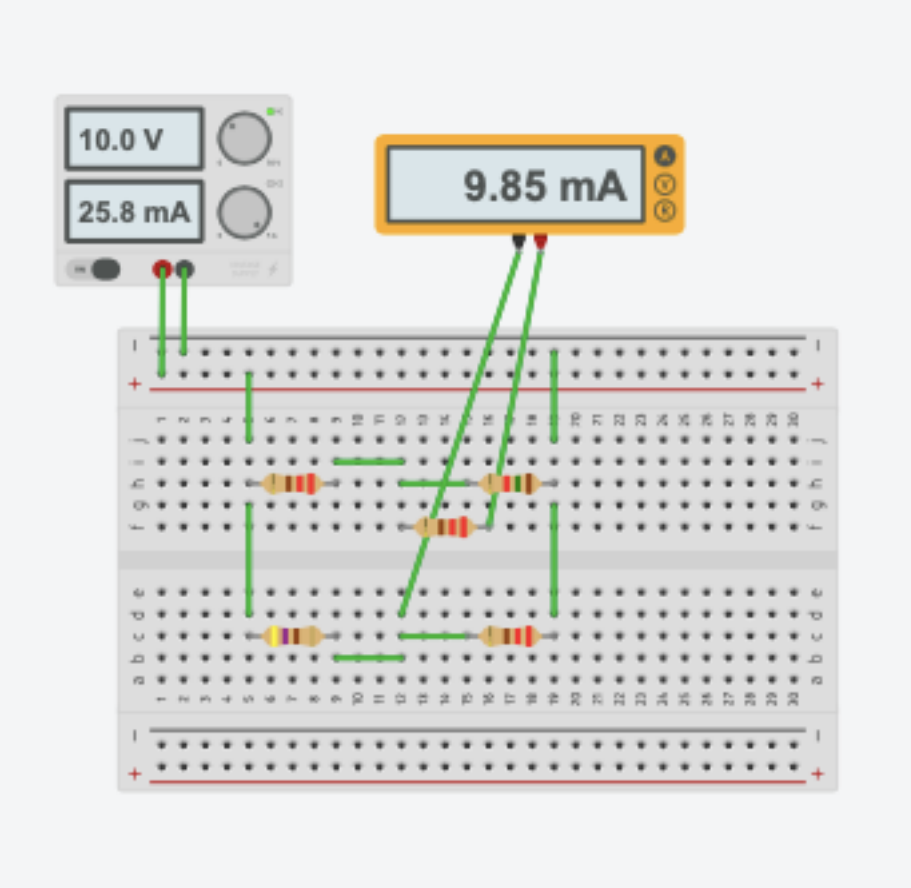
$I_{L(TH)}$ = V_{TH} / (R_{TH}+R_L)

= 5.53(V) / (342 + 220) (Ω)

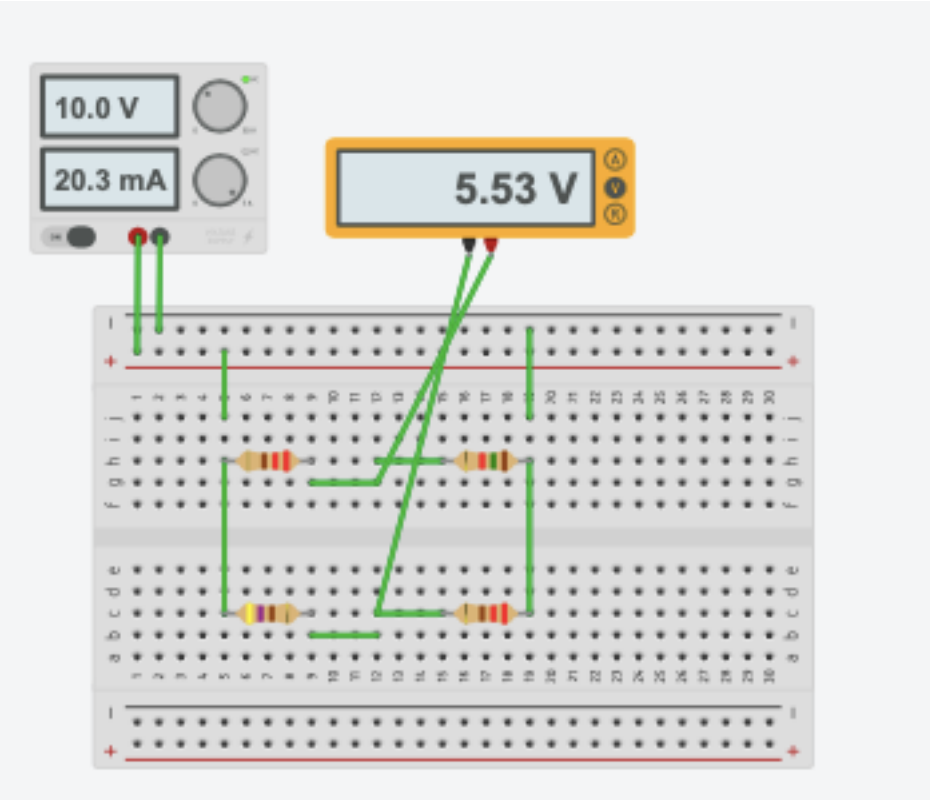
= 0.009839(A)

≒ 9.84(mA)

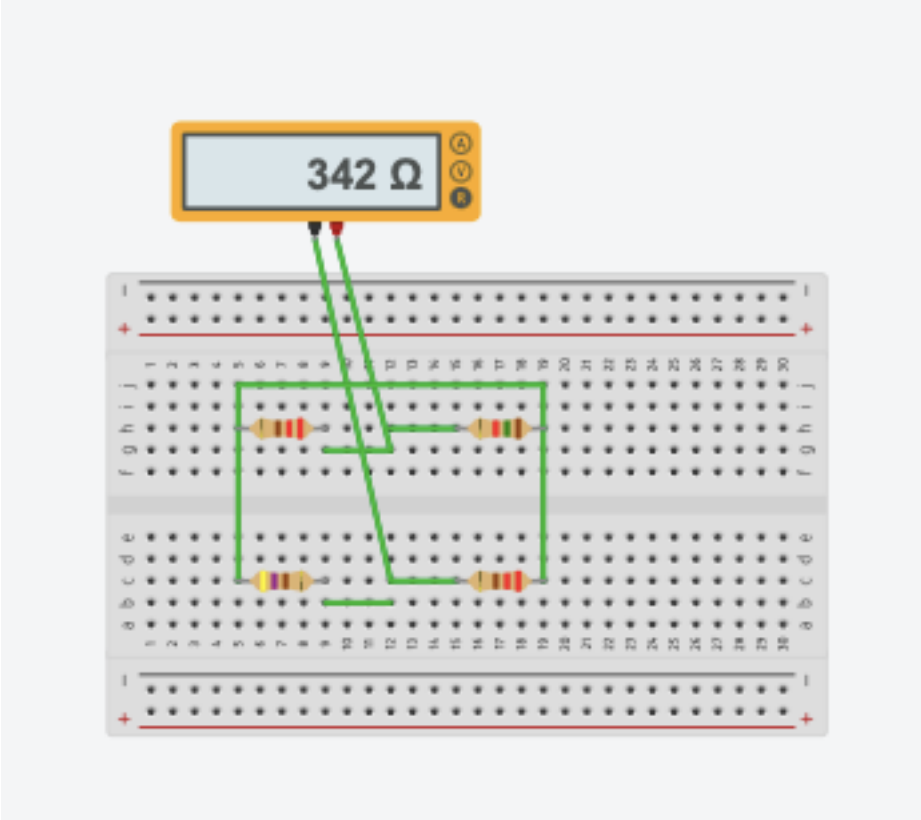
(2) step1(I_L)量測之 tinkercad 截圖



(3) step2-I(V_{TH})量測之 tinkercad 截圖



(4) step2-II(R_{TH})量測之 tinkercad 截圖



(5) step3($I_{L(TH)}$)量測之 tinkercad 截圖